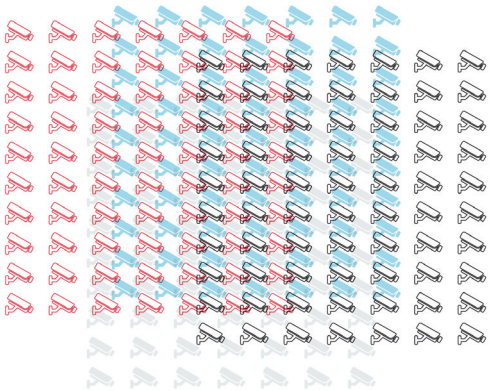


Scalable Video Processing for Modern Security Systems

Optimizing storage, monitoring, AI and infrastructure without replacing cameras

Introduction

Security video systems are growing faster than ever. Camera counts continue to rise, resolutions increase, and organizations are under pressure to retain footage longer while also introducing AI-driven analytics.

At the same time, most modern security cameras already include on-device encoding, making camera replacement an impractical and unnecessary way to address backend challenges.

The real constraints now exist after the camera, in storage systems, monitoring platforms, AI pipelines, and GPU-based infrastructure.

NETINT addresses these challenges by providing a high-density, hardware-based video processing layer that sits between existing cameras and downstream systems. This approach allows organizations to scale security video efficiently, control costs, and modernize capabilities without disrupting deployed camera environments.

The following use cases illustrate how NETINT supports large-scale security systems across their most critical backend workflows.

The Core Use Cases

1. Centralized Video Storage Optimization at Scale

As video volumes grow, storage quickly becomes one of the largest cost drivers in security systems. NETINT enables mass transcoding and format normalization after video leaves the camera, reducing storage footprint and long-term infrastructure cost without affecting camera deployments.

2. Low-Bitrate Proxy Streams for Monitoring and Operations

Live monitoring rarely requires full-resolution video, yet many systems deliver it by default. NETINT generates efficient, low-bitrate proxy streams for dashboards, control rooms, and mobile access, allowing operators to monitor more cameras with less bandwidth, power, and infrastructure.

3. Pre-Processing Video for AI Video Analytics

AI analytics place significant pressure on bandwidth, cloud cost, and GPU resources. NETINT pre-processes and conditions video before inference, reducing data transfer and offloading non-AI workloads from GPUs so AI can scale sustainably across more cameras.

4. GPU Offload in Multi-Channel Security Systems

In many deployments, GPUs are used for both AI inference and routine video processing. NETINT offloads decoding and encoding from GPUs, freeing them for higher-value AI tasks while reducing power consumption and simplifying infrastructure scaling.

How These Use Cases Work Together

Individually, each use case addresses a specific backend challenge. Together, they define a single architectural approach: centralized, high-density video processing designed for scale.

NETINT does not replace cameras, monitoring platforms, storage systems, or AI models. It optimizes how video flows between them, allowing each component to operate more efficiently.

USE CASE 1

Centralized Video Storage Optimization at Scale

Who this is for:

- **Security system operators managing hundreds or thousands of cameras**
- **Organizations with centralized or multi-site video storage**
- **Teams experiencing rapid growth in storage cost**
- **Environments where camera replacement is not feasible**

If you are responsible for managing large volumes of security video, this use case applies to you.

Scenario

Large facilities such as hotels, campuses, transportation hubs, or enterprise buildings operate hundreds to thousands of security cameras across multiple sites. Each camera already performs on-device encoding and continuously streams video to a centralized recording or storage system.

As camera counts increase and resolutions move to 4K and beyond, storage requirements grow exponentially.

The Challenge

Security teams face several compounding problems:

- Rapidly rising storage costs driven by high-resolution, always-on video
- Inconsistent video formats from mixed camera vendors
- Limited flexibility to change compression or profiles once video is ingested
- Operational pressure to retain footage longer for compliance and investigations

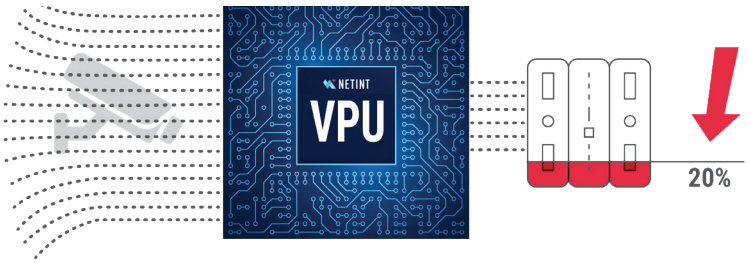
Replacing existing cameras to solve storage issues is not practical or cost-effective.

The NETINT Role

NETINT sits after the camera and before storage, in the centralized video processing layer. Without modifying or replacing cameras, NETINT enables:

- High-density decoding and transcoding of incoming camera streams
- Format normalization across vendors and camera models
- Optimized compression profiles tailored for long-term storage
- Mass parallel processing of hundreds or thousands of streams per server

All video processing is handled efficiently in hardware, freeing general-purpose CPUs and GPUs.



The Outcome
By introducing NETINT into the backend architecture, operators achieve:

- Significant reduction in storage footprint
- Lower infrastructure and power costs per camera
- Consistent, predictable video formats across the system
- Improved scalability as camera counts grow

Most importantly, these benefits are delivered without touching existing camera deployments.

Where This Use Case Fits Best
- Centralized recording systems and archival platforms
- Multi-site security infrastructures with shared backend systems
- Multi-site security deployments with mixed camera vendors and generations
- Security environments requiring long-term video retention

> **Key Takeaway**
> NETINT enables large-scale security systems to control storage growth by optimizing video after the camera, at the point where cost and scalability matter most.

USE CASE 2

Low-Bitrate Proxy Streams for Monitoring and Operations

Who this is for:
- **Security operations teams responsible for live monitoring and incident response**
- **Organizations operating centralized or distributed security operation centers**
- **operators who access video via dashboards, control rooms, or mobile devices**
- **Teams under pressure to scale monitoring without increasing bandwidth, servers, or power use**

If you are responsible for monitoring large numbers of cameras across one or more locations, this use case applies to you.

Scenario

- Large security deployments often require continuous or on-demand monitoring across many sites
- Operators may view dozens or hundreds of live feeds simultaneously
- Video is accessed from control rooms, regional offices, or mobile devices

While cameras generate high-resolution video suitable for recording and investigation, most monitoring workflows do not require full-resolution streams at all times.

The Challenge

Security teams face several compounding problems:

- High-resolution video consumes excessive bandwidth when used for live monitoring
- Monitoring platforms struggle to scale as the number of viewed feeds increases
- Duplicating full-resolution streams for monitoring and recording increases infrastructure cost
- Remote and mobile access places additional strain on networks

As camera counts grow, these challenges make real-time monitoring more expensive, less responsive, and harder to scale.

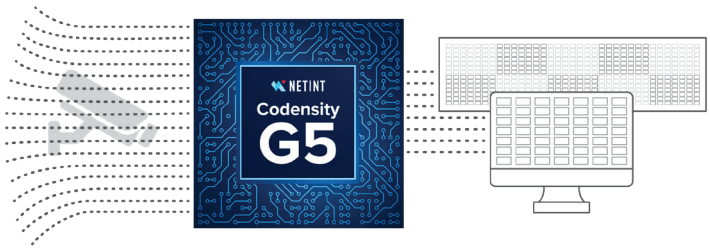
The NETINT Role

NETINT operates after the camera and before monitoring systems, in the centralized video processing layer.

Without modifying or replacing cameras, NETINT enables:

- Generation of low-bitrate proxy streams optimized for live viewing
- High-density decoding and re-encoding of incoming camera feeds
- Parallel delivery of full-resolution video for recording and lightweight streams
- Hardware-based video processing that minimizes CPU and GPU usage

This architecture allows monitoring workflows to scale independently from recording and archival requirements.



The Outcome
By introducing NETINT into the backend architecture, operators achieve:

- Responsive, scalable live monitoring across large camera deployments
- Reduced bandwidth consumption for dashboards and operator workstations
- Lower infrastructure and power costs for monitoring systems
- Improved video access for remote and mobile operators

These benefits are delivered without impacting recording quality or requiring changes to existing camera deployments.

Where This Use Case Fits Best

- Centralized security operation centers and monitoring hubs
- Multi-site security infrastructures with shared monitoring platforms
- Deployments with large numbers of concurrently viewed camera feeds
- Security systems supporting mobile or remote operator access

> **Key Takeaway**
> NETINT enables scalable and cost-efficient security monitoring by generating low-bitrate proxy video streams, allowing operators to view more cameras with less bandwidth, power, and infrastructure.

USE CASE 3

Pre-Processing Video for AI Video Analytics

Who this is for:

- **Organizations deploying AI-based video analytics for security, safety, or operational intelligence**
- **Teams running AI inference in the cloud or centralized data centers**
- **Security and IT teams under pressure to control cloud, bandwidth, and inference costs**
- **Environments where cameras cannot be replaced but AI capabilities must be added**

If you are planning to scale AI video analytics across many cameras, this case applies to you.

Scenario

Security systems are increasingly augmented with AI models for tasks such as threat detection, anomaly detection, and behavior analysis. In many deployments, video streams are transmitted from cameras to centralized or cloud-based AI platforms for inference.

As the number of cameras and AI models increases, the cost of transporting, processing, and analyzing video grows rapidly.

The Challenge

Security teams face several compounding problems:

- High-resolution video drives excessive bandwidth consumption when sent to AI platforms
- Cloud inference costs scale directly with video bitrate and frame rate
- GPUs are often overloaded with video processing tasks instead of AI inference
- Scaling AI across thousands of streams becomes financially unsustainable

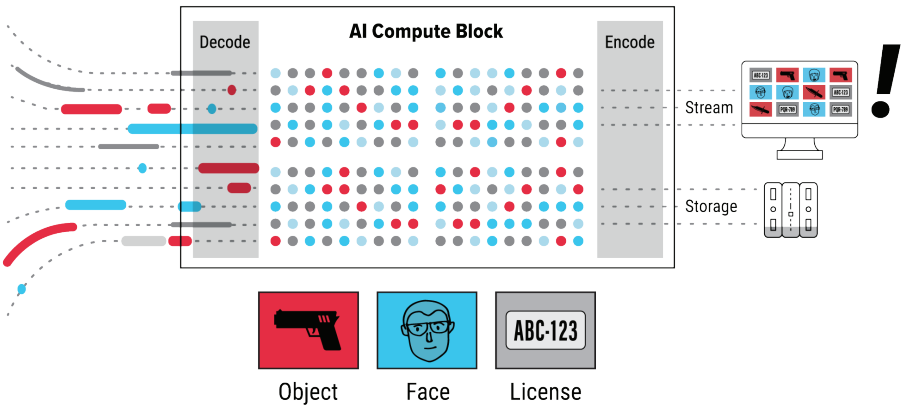
Without optimization, AI initiatives struggle to move beyond pilot deployments.

The NETINT Role

NETINT operates after the camera and before AI inference, in the centralized video processing layer.
Without modifying or replacing cameras, NETINT enables:

- Pre-processing and conditioning of video streams before AI inference
- Efficient compression optimized for machine analysis, not human viewing
- High-density decode and encode across large numbers of concurrent streams
- Hardware-based video processing that offloads non-AI workloads from GPUs

NETINT does not run AI models. Instead, it ensures that AI platforms receive video in the most efficient and cost-effective form.



The Outcome
By introducing NETINT into the AI video pipeline, organizations achieve:

- Lower cloud bandwidth and data transfer costs
- Reduced GPU load and improved inference efficiency
- Ability to scale AI analytics across more cameras within existing budgets
- More predictable and sustainable AI operating costs

This makes AI video analytics practical at scale, not just in limited deployments.

Where This Use Case Fits Best
- Cloud-based or hybrid AI video analytics platforms
- Centralized AI inference environments supporting multiple sites
- Security systems adding AI capabilities to existing camera infrastructure
- Deployments where AI costs are limiting broader rollout

> **Key Takeaway**
> NETINT enables scalable AI video analytics by pre-processing video before inference, reducing bandwidth, GPU load, and cloud cost without replacing existing cameras.

USE CASE 4

GPU Offload in Multi-Channel Security Systems

Who this is for:
- **Orgs operating GPU-based infrastructure for security video and AI workloads**
- **IT and infrastructure teams for data center power, cost, and capacity planning**
- **Platforms running video processing and AI inference on the same GPU servers**
- **Environments where GPU resources are constrained or expensive to scale**

If GPUs are becoming a cost or scalability bottleneck in your security system, this use case applies to you.

Scenario
Many modern security platforms rely on GPUs to support AI inference, analytics, and advanced processing. Over time, GPUs are often also tasked with video decoding, encoding, and stream manipulation for large numbers of camera feeds. As camera counts increase, this mixed workload places growing pressure on GPU resources.

The Challenge

Security teams face several compounding problems:

- GPUs are used for video processing tasks that do not require AI acceleration
- Video decode and encode workloads consume GPU capacity and power
- AI inference performance is limited by competing video workloads
- Scaling GPU infrastructure significantly increases cost, power, and cooling requirements

As a result, GPUs become an expensive bottleneck rather than an efficient AI accelerator.

The NETINT Role

NETINT operates in the centralized video processing layer, alongside GPU-based systems. Without modifying or replacing cameras, NETINT enables:

- Offloading of video decoding and encoding from GPUs
- High-density, hardware-based video processing optimized for scale
- Clear separation of video processing and AI inference workloads
- More efficient utilization of GPUs for AI tasks

NETINT complements GPUs rather than replacing them, allowing each processor to focus on what it does best.

The Outcome

By introducing NETINT into multi-channel security systems, organizations achieve:

- Reduced GPU load and improved AI inference performance
- Lower power consumption and infrastructure cost per stream
- Ability to support more cameras and AI models on existing hardware
- Simpler and more predictable system scaling

This results in a more balanced and cost-efficient security architecture.

Where This Use Case Fits Best

- Security platforms combining video processing and AI inference
- Centralized data centers supporting large camera deployments
- Cloud or hybrid environments with GPU-based infrastructure
- Deployments where GPU cost or power limits further growth

Key Takeaway

NETINT offloads video processing from GPUs, enabling security systems to scale more efficiently by reducing power, cost, and infrastructure pressure in multi-channel environments.

Applying These Use Cases in Real-World Security Architectures

Every security deployment is different. Camera types, retention requirements, monitoring workflows, AI objectives, and infrastructure constraints vary widely across organizations and environments.

Rather than offering a one-size-fits-all configuration, NETINT is designed to integrate flexibly into existing architectures. The same centralized video processing layer can support storage optimization, monitoring, AI pre-processing, and GPU offload simultaneously or be introduced incrementally over time.

While the examples in this booklet are generalized, they reflect real backend challenges faced by large-scale security systems today. The most effective way to evaluate applicability is to review your current architecture and identify where video processing is creating cost, power, or scalability constraints.

Learn how large-scale security systems can reduce cost and scale efficiently without replacing cameras.

Meet with the NETINT team during the Security Show to discuss your backend video architecture. For follow-up discussions, contact us at info@netint.com to arrange an online consultation with NETINT's technical team.

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